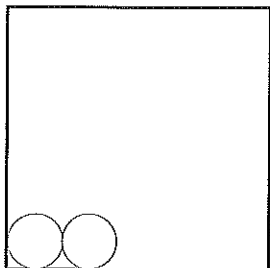


# 1 Section One — Classifying Materials

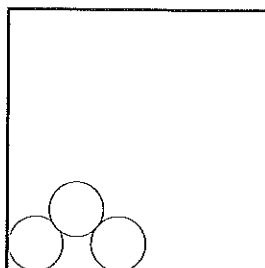
## The Three States of Matter

Answer these questions

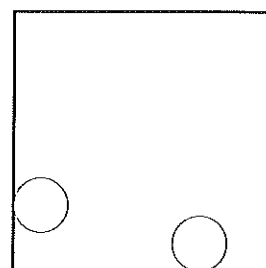
- Q1 Name the three states of matter.
- Q2 Name the theory that explains the major differences between these states of matter.
- Q3 In each of the boxes below, draw a diagram to show the arrangements of the particles in these three states of matter (*they have been started for you*).



Name: \_\_\_\_\_



Name: \_\_\_\_\_



Name: \_\_\_\_\_

- Q4 Sort the following phrases into lists that describe the properties of each state of matter.

random arrangement      weaker attractive forces      definite volume      particles in fixed position

constant random motion      no forces of attraction

definite shape      no definite shape      definite volume      no definite volume

regular lattice arrangement

no definite shape      particles free to move

very dense      strong attractive forces      constant rapid and random motion

random molecular arrangement      can't be compressed      low density

little particle movement      no strength      can be compressed      particles free to move

quite dense      can't be compressed

little strength      often strong

- Q5 a) Which state of matter is the strongest? Why?
- b) Which state will have the least particles in a given volume? Explain why.
- c) For a given substance, which state of it will have the most energy? Explain why.
- d) Which state will water be in at:  $-10^{\circ}\text{C}$ ,  $10^{\circ}\text{C}$ ,  $110^{\circ}\text{C}$  (under normal atmospheric pressure)? What is the common name for each state?
- e) Why is it difficult to squash liquids? Give an example of something that might use this property.
- f) Gases can be squashed. What does this tell you about the distance between gas particles?
- g) Explain how a gas exerts pressure on the sides of its container.
- h) What would happen to the pressure of a gas if you increased its temperature in a rigid container? Why would this happen?

**Top Tips:** You need to know all the differences between solids, liquids and gases and how their properties make them suitable for various jobs. These physical properties can all be explained by how close the particles are and how fast they're moving — easy, eh.